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1987

Final Report

Portal Project, Phase 4
Lewis & Clark County, Montana
IFB 4167-G

January, 1987

L. C. HANSON COMPANY

CONSULTING ENGINEERS & SURVEYORS

HELENA -- GREAT FALLS -- GLENDIVE

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Final Report

Portal Project, Phase 4
Lewis & Clark County, Montana
IFB 4167-G

January, 1987

Prepared for: Mr. Richard Juntunen, Chief
Abandoned Mine Reclamation
Bureau
Department of State Lands
1625 11th Ave.
Helena, MT 59620

Prepared by: L.C. Hanson Company
Consulting Engineers
P.O. Box 299
Helena, MT 59624

Project Inspector: Allen Sawitke, P.E.



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I. Introduction

A. Project Objectives

The Phase 4 Portal Project was undertaken to eliminate the public safety hazards resulting from unreclaimed mine openings at several abandoned hardrock mines in Lewis & Clark County, Montana. Closure of dangerous shafts and adits through backfilling, bulkhead installation, and/or fencing was accomplished to eliminate accidental entry.

B. Project Location

The project covered nine sites located close to Helena, Montana. Legal descriptions are listed below and site locations are shown on the vicinity map contained herein.

Helena Mining District

Block II - Sparta Site	T10N R4W Sec. 36 SE
Blue Cloud Site	T10N R5W Sec. 30 S
Broadwater Site	T10N R4W Sec. 28 NW
City Park Site	T10N R4W Sec. 36 NW
Hawkeye - Chaucer Site	T10N R3W Sec. 31 SW
Kranich Site	T10N R3W Sec. 31 SW
Le Grand Canyon Site	T10N R4W Sec. 27 NE
Lombardy Site	T10N R4W Sec. 27 NW
USFS - Davis Site	T9N R4W Sec. 1 SW

C. History

Hardrock mining has taken place in Montana since 1862 and was essentially unregulated from a reclamation standpoint for over one hundred years. This resulted in thousands of hazardous shafts and adits in mining districts across the state.

A brief history of the Helena Mining District follows. Where production statistics are available for individual sites they are noted.

Mineral production came mainly from placers in the Helena Mining District though several lode deposits were also mined. The U.S. Bureau of Mines credits the district with \$6.7 million for the period 1901 - 1958.

D. Site Description And Problems

The sites included in this project are located in or near residential areas, historic sites, close to public roads or in recreation areas. All mine openings threatened public safety. The shafts involved were of depth great enough to prevent unaided escape upon entry. Adits were reclaimed or bulkheaded to protect the curious from unsuspected dangers.

II. Description of Project Reclamation

A. Project Planning

Backfill was recommended for all mine openings to permanently eliminate the hazards. Many landowners refused to allow this, insisting instead on accessing bulkheads or fencing. These techniques do accomplish the goals of preventing accidental entry but are semi-permanent in nature and may need maintenance in the future.

B. Chronological History

Pre-Bid Conference	June 13, 1984
Bid Opening	June 27, 1984
Contract Award	June 29, 1984
Contract Awarded To:	

Allen Electric, Inc.
P.O. Box 5566
Helena, MT 59604
(406)442-3780

Pre-construction Meeting	July 11, 1984
Notice to Proceed	July 16, 1984
Began Work	July 16, 1984
Substantial Completion	August 29, 1984
Resumed Work	October 7, 1984
Project Completed	October 18, 1984

C. Equipment

D-7 Dozer
Fence Post Driver
Dynamite for Blasting Post Holes
Backhoe
J.D. 555 Dozer
Air Compressor and Jack Hammer

D. Construction Operations

The Contractor performed the following:

1. Backfilled 3 adits
2. Backfilled 9 shafts
3. Backfilled 1 trench
4. Installed 1 culvert access pipe
5. Installed 2 adit doors (6'x 5', 6'x 5')
6. Installed combination barbed and woven wire fence at 2 sites
7. Revegetated all areas disturbed by construction activities

III. Cost Summary

A. Final Payment Request

A copy of the Final Payment Request is contained in Appendix A. That document contains the final quantities and costs for each work item.

B. Change Order

The following Change Order was executed during the course of the project:

1. Change Order #1 - Reinforce adit door at the Broadwater Site.

C. Cost Per Site / Unit

The following summary describes the work performed (with measured and estimated quantities) and the total cost for each site:

1. Blue Cloud Site \$ 13,881.50
 - a. Backfill 4 shafts (860 c.y.)
 - b. Install wire fence (167.1 rods)
 - c. Install hazard signs (25 each)
 - d. Seed, fertilize & mulch

2.	Broadwater Site	\$ 5,247.00
	a. Install adit door (6'x 5')	
	(incl. C.O. work)	
	b. Install 30"x 20' CMP & backfill	
	(30 c.y.)	
	c. Install wire fence (8 rods)	
	d. Install hazard signs (4 each)	
	e. Seed, fertilize & mulch	
3.	Lombardy Site	\$ 1,458.00
	a. Backfill 2 adits (310 c.y.)	
	b. Seed, fertilize & mulch	
4.	Le Grand Canyon Site	\$ 1,317.00
	a. Backfill 1 shaft (280 c.y.)	
	b. Seed, fertilize & mulch	
5.	City Park Site	\$ 1,693.00
	a. Backfill 1 trench & 2 shafts	
	(360 c.y.)	
	b. Seed, fertilize & mulch	
6.	Block 11, Sparta Street Site	\$ 117.50
	a. Backfill 1 adit (25 c.y.)	
	b. Seed, fertilize & mulch	
7.	Hawkeye - Chaucer Street Site	\$ 141.00
	a. Backfill 1 shaft (30 c.y.)	
	b. Seed, fertilize & mulch	
8.	Kranich Site	\$ 423.00
	a. Backfill 1 shaft (90 c.y.)	
	b. Seed, fertilize & mulch	
9.	USFS - Davis Site	\$ 2,400.00
	a. Install adit door (6'x 5')	
	b. Seed, fertilize & mulch	

	Total Project Cost	\$ 26,678.00

IV. Summary

A. Completed Reclamation

The required work was completed within the contract time allowed.

The project resulted in plugging of some adits and shafts and limits access to other adits and shafts by installed doors and fences. Hazard signs were installed where appropriate. Revegetation of disturbed areas was also accomplished.

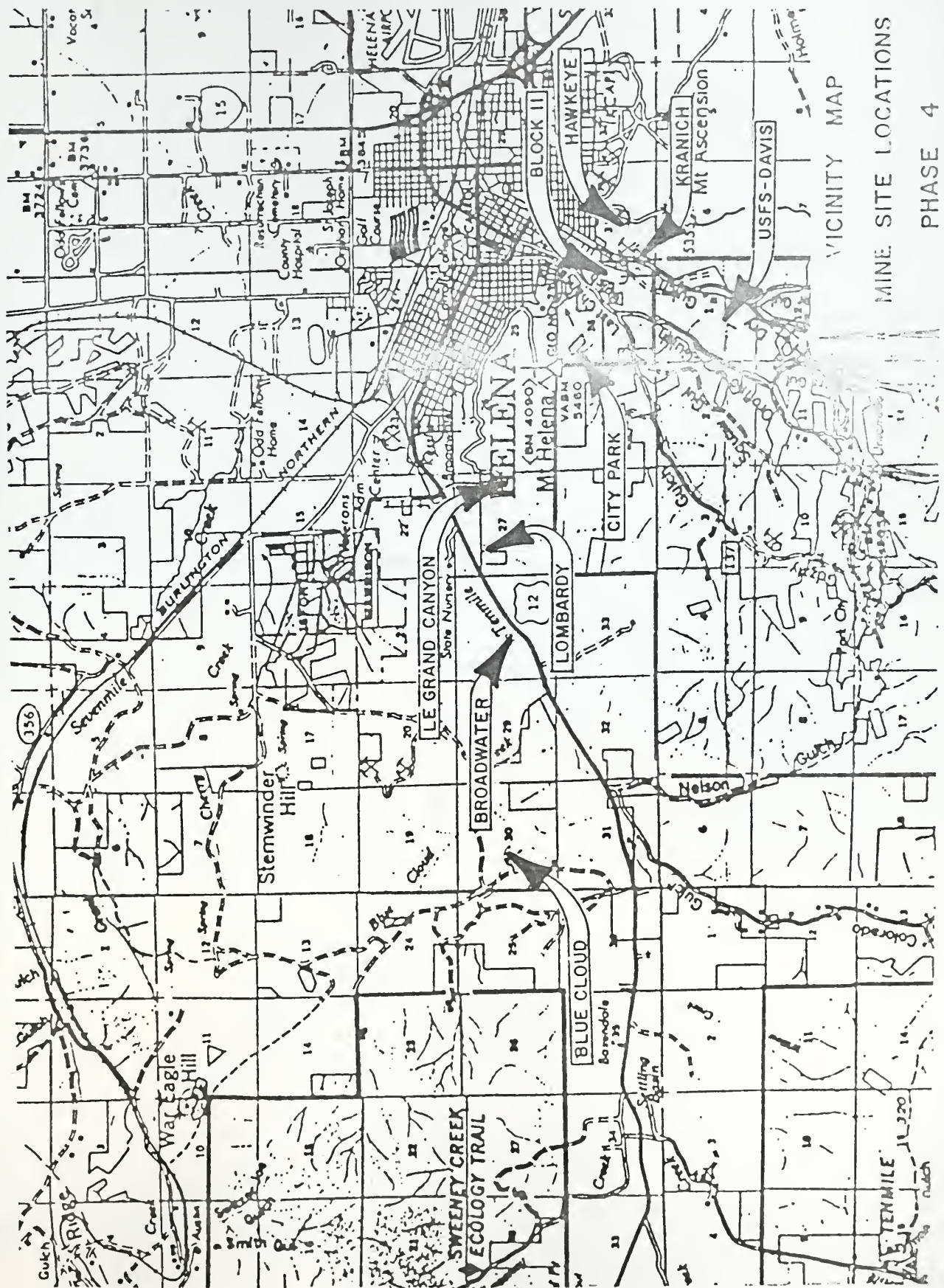
B. Comments

The Contractor completed the work as specified.

Monitoring of all sites should be undertaken periodically to insure all backfilling and fencing work and the revegetation efforts remain intact.

V. Slides

The slide log and slides are contained in Appendix B.



VICINITY MAP

MINE SITE LOCATIONS
PHASE 4

APPENDIX A

FROM August 29, 1984

 TO October 11, 1984

 PROJECT NAME PORTAL PROJECT, PHASE 4 - LEWIS AND CLARK COUNTY, MONTANA

 LOCATION LEWIS AND CLARK COUNTY, MONTANA

PROJ. NO.

IFB 4167-G

 NAME OF CONTRACTOR ALLEN ELECTRIC, INC.

ADDRESS

PO BOX 5566 Helena, MT
59604

CHANGE ORDERS			CONTRACT STATUS			
No.	Description	Amount	Total Amount	Completed Amount	Uncompleted Amount	Per Cent Complete
1	Reinforce Adit Door - Item 9	350.00	350.00	350.00	0	100
Total Change Orders			350.00			
CONTRACT TO DATE INCLUDING CHANGE ORDERS			28,345.11	26,677.61	0	100

TOTAL RETAINAGE \$

SECURITIES ON DEPOSIT \$

ADJUSTED RETAINAGE \$

*For use only when securities are on deposit in lieu of 10% retainage.

COMPLETED TO DATE

\$ 26,677.61

PLUS MATERIALS ON SITE

\$ -0-

TOTAL COMPLETED TO DATE

\$ 26,677.61

*10% OR ADJUSTED RETAINAGE

\$ -0-

TOTAL AMOUNT EARNED TO DATE

\$ 26,677.61

LESS PREVIOUS PAYMENTS

\$ 24,624.95

AMOUNT DUE THIS PAYMENT

\$ 2,052.66

LESS 1% TAX

\$ 20.53

TOTAL DUE CONTRACT

\$ 2,032.13

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

Allen Electric, Inc.

(Contractor)

 By [Signature]

 Date 10/30/84

RECOMMENDED BY:

L. C. Hanson Company

(Engineer)

 By [Signature]

 Date 10/30/84

Approved By:

Montana Department of State Lands

Owner

[Signature] 11/1/84

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L. C. HANSON CO.

ITEMIZATION OF QUANTITIES AND COSTS

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	WORK COMPLETED TO DATE	COST COMPLETED WORK	PERCENT COMPLETE
1.	BACKFILL MINE OPENINGS	LUMP SUM	\$ 8,455.00	8,455.00	8,455.00	100
2.	FENCE - WIRE TYPE CW OR CM	170 RODS	25.00	175.1 RODS	4,377.50	103
3.	PANEL - SINGLE TYPE CW	14 EACH	80.00	0	0	100
4.	PANEL - DOUBLE TYPE CW	2 EACH	110.00	2 EACH	220.00	100
5.	PANEL - CORNER TYPE CW	25 EACH	225.00	22 EACH	4,950.00	100
6.	GATE - METAL 4 FT	2 EACH (as Per Addendum #1)	100.00	0	0	100
7.	DEADMAN	5 EACH	100.00	7 EACH	700.00	140
8.	INSTALL STATE-FURNISHED SIGNS	29 EACH	27.59	29 EACH	800.11	100
9.	ADIT DOOR - TYPE A GRID	1 EACH	2,400.00	1 EACH	2,400.00	100
10.	ADIT DOOR - TYPE B SOLID	1 EACH	2,400.00	1 EACH	2,400.00	100
11.	30" CORRUGATED METAL ACCESS PIPE	20 L.F.	63.75	20 EACH	1,275.00	100
12.	SEEDING, FERTILIZING, MULCHING	LUMP SUM	750.00	750.00	750.00	100
				TOTAL	\$26,327.61	

APPENDIX B

Phase 4 Portal Project
Blue Cloud & Helena Mining Districts, Lewis & Clark County
Slide Log

1. June, 1983	Before:	Blue Cloud Shafts #1 & #2 - For backfill
2. June, 1983	Before:	Blue Cloud Shafts #1 & #2 - For backfill
3. June, 1983	Before:	Blue Cloud Shafts #1 & #2 - For backfill
4. July, 1984	After:	Blue Cloud Shafts #1 & #2 - Completed backfill, prior to seeding
5. July, 1984	After:	Blue Cloud Shafts #1 & #2 - Seeded with straw mulch
6. Sept., 1982	Before:	Blue Cloud Area #1 - Within fence enclosure
7. Sept., 1982	Before:	Blue Cloud Area #1 Adit - Within fence enclosure
8. Sept., 1982	Before:	Blue Cloud Area #1 Shaft - Within fence enclosure
9. Sept., 1982	Before:	Blue Cloud Area #1 Raise - Within fence enclosure
10. Sept., 1982	Before:	Blue Cloud Area #1 Shaft - Within fence enclosure
11. Sept., 1982	Before:	Blue Cloud Area #1 Shaft - Within fence enclosure
12. Sept., 1982	Before:	Blue Cloud Area #1 Shaft - Within fence enclosure
13. Sept., 1982	Before:	Blue Cloud Area #1 Shaft - Within fence enclosure
14. Sept., 1982	Before:	Blue Cloud Area #1 Shaft - Within fence enclosure
15. Oct., 1984	After:	Blue Cloud Area #1 Enclosure - Complete
16. July, 1984	Before:	Blue Cloud Area #2 - Uphill side of fence enclosure
17. Sept., 1982	Before:	Blue Cloud Area #2 Shaft - Within fence enclosure
18. Sept., 1982	Before:	Blue Cloud Area #2 Shaft - Within fence enclosure
19. Sept., 1982	Before:	Blue Cloud Area #2 Shaft - Within fence enclosure
20. Sept., 1982	Before:	Blue Cloud Area #2 Shaft - Within fence enclosure
21. Sept., 1982	Before:	Blue Cloud Area #2 Shaft - Within fence enclosure
22. Sept., 1982	Before:	Blue Cloud Area #2 Shaft - Within fence enclosure
23. Sept., 1982	Before:	Blue Cloud Area #2 Shaft - Within fence enclosure
24. Sept., 1982	Before:	Blue Cloud Area #2 Shaft - Within fence enclosure
25. Sept., 1982	Before:	Blue Cloud Area #2 Trench - Within fence enclosure

26. Sept., 1982	Before:	Blue Cloud Area #2 Trench- Within fence enclosure
27. Sept., 1982	Before:	Blue Cloud Area #2 Trench - Within fence enclosure
28. Sept., 1982	Before:	Blue Cloud Area #2 Adit - Within fence enclosure
29. Sept., 1982	Before:	Blue Cloud Area #2 Shaft - Within fence enclosure
30. Sept., 1982	Before:	Blue Cloud Shaft #3 & #4 - Fence
31. Sept., 1982	Before:	Blue Cloud Shaft #3 & #4 - Fence
32. Sept., 1982	Before:	Blue Cloud Shaft #3 & #4 - Fence
33. Sept., 1982	Before:	Blue Cloud Shaft #3 & #4 - Fence
34. July, 1984	During:	Blue Cloud Shaft #3 & #4 - Fence post grouted in place
35. Sept., 1982	Before:	Blue Cloud Shaft #5 & #6 - Fence
36. Sept., 1982	Before:	Blue Cloud Shaft #5 & #6 - Fence
37. Sept., 1982	Before:	Blue Cloud Shaft #5 & #6 - Fence
38. Sept., 1982	Before:	Blue Cloud Shaft #5 & #6 - Fence
39. July, 1984	Before:	Blue Cloud Shaft #5 & #6 - Fence
40. July, 1984	During:	Blue Cloud Shaft #5 & #6 - During fencing
41. Oct., 1984	After:	Blue Cloud Shaft #5 & #6 - Complete
42. July, 1984	After:	Blue Cloud Shaft #7 - Completed backfill
43. Oct., 1984	After:	Blue Cloud Shaft #7 - Seeded with straw mulch
44. Oct., 1984	After:	Blue Cloud Shaft #7 - Complete
45. Oct., 1984	After:	Blue Cloud Shaft #8 - Seeded with straw mulch
46. Oct., 1984	After:	Blue Cloud Shaft #8 - Complete
47. July, 1982	Before:	Aerial view of Blue Cloud Mine
48. July, 1983	Before:	Broadwater Adit #1 - Adit door
49. July, 1983	Before:	Broadwater Adit #2 - Access Pipe
50. July, 1983	Before:	View of Broadwater Mine
51. July, 1983	Before:	Broadwater Shaft #3 - Fence
52. Nov., 1983	Before:	Lombardy Adit #1 - Backfill
53. Nov., 1983	Before:	Lombardy Adit #1 - Backfill
54. Nov., 1983	Before:	Lombardy Adit #2 - Backfill
55. Oct., 1984	During:	Lombardy Adit #1 - Fertilizing
56. Oct., 1984	During:	Lombardy Adit #1 - Seeding
57. July, 1984	During:	Lombardy Adit #1 - Backfilling
58. Nov., 1983	Before:	Le Grand Canyon Shaft - Backfill
59. Nov., 1983	Before:	Le Grand Canyon Shaft - Backfill
60. Nov., 1983	Before:	Le Grand Canyon Shaft - Backfill
61. Aug., 1984	Before:	Le Grand Canyon Shaft - Backfill
62. Aug., 1984	Before:	Le Grand Canyon Shaft - Backfill
63. Aug., 1984	During:	Le Grand Canyon Shaft - Backfilling
64. Aug., 1984	During:	Le Grand Canyon Shaft - Backfilling
65. Aug., 1984	After:	Le Grand Canyon Shaft - Complete
66. April, 1983	Before:	Aerial of City Park Site
67. June, 1983	Before:	City Park Shaft - Backfill
68. Sept., 1983	Before:	City Park Shaft - Backfill
69. Sept., 1983	Before:	City Park Shaft - Backfill

70. Sept., 1983	Before:	City Park Shaft - Backfill
71. June, 1983	Before:	City Park Shaft - Backfill
72. Sept., 1983	Before:	City Park Shaft - Backfill
73. June, 1983	Before:	City Park Trench - Backfill
74. Sept., 1983	Before:	City Park Trench - Backfill
75. Sept., 1983	Before:	City Park Trench - Backfill
76. Oct., 1984	During:	City Park Shaft - Backfilling
77. Oct., 1984	After:	City Park Shaft #1 - Completed
78. Oct., 1984	After:	City Park Shaft #2 - Completed
79. Oct., 1984	After:	City Park Trench - Completed
80. Oct., 1984	After:	City Park Trench - Completed
81. Oct., 1984	After:	City Park Trench - Seeding
82. Oct., 1984	After:	City Park Trench - Fertilizing & mulching with straw
83. May, 1983	Before:	Sparta Street Shaft - Backfill
84. May, 1983	Before:	Sparta Street Shaft - Backfill
85. Aug., 1984	Before:	Sparta Street Shaft - Backfill
86. Aug., 1984	During:	Sparta Street Shaft - Backfilling
87. May, 1983	Before:	Chaucer Street Shaft - Backfill
88. May, 1983	Before:	Chaucer Street Shaft - Backfill
89. Aug., 1984	During:	Chaucer Street Shaft - Backfilling
90. Sept., 1983	Before:	Kranich Shaft - Backfill
91. Sept., 1983	Before:	Kranich Shaft - Backfill
92. Aug., 1984	During:	Kranich Shaft - Backfilling
93. Oct., 1984	After:	Kranich Shaft - Seeded
94. Aug., 1983	Before:	Davis-USFS Adit - Adit Door
95. Aug., 1983	Before:	Davis-USFS Adit - Adit Door
96. Aug., 1983	Before:	Davis-USFS Adit - Adit Door
97. Aug., 1983	Before:	Davis-USFS Adit - Adit Door

